

Shapes of Molecules

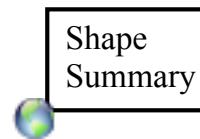
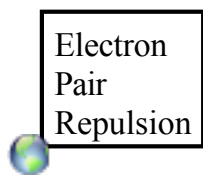
VSEPR Model - Valence Shell Electron Pair Repulsion

- A) Valence shell electron pairs repel themselves, getting as far away from each other as they can
- B) Count the Effective Electron Pairs on Central Atom

Single bond = Effective Electron Pair

Unshared Pair = Effective Electron Pair

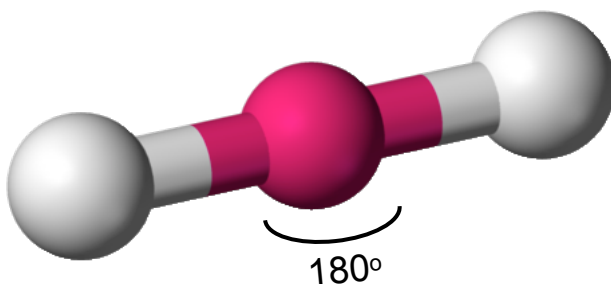
Double or Triple Bond - counts as only one effective electron pair



Linear Shape

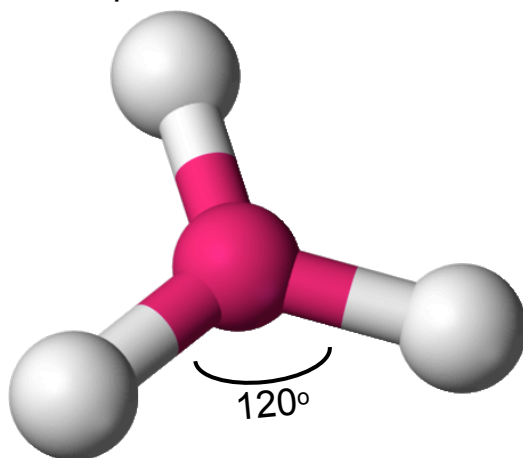
Central atom has 2 effective pairs : both shared

example: BeI_2 , CO_2



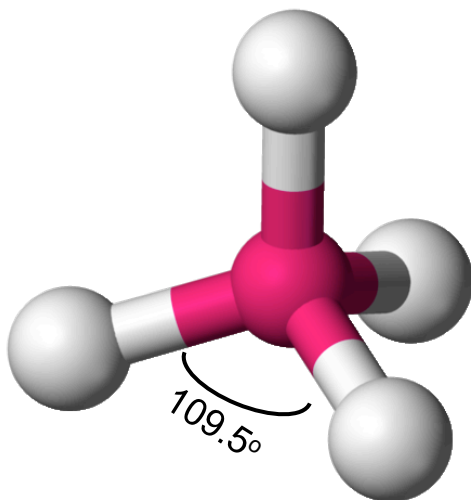
Trigonal planar

Central atom has 3 effective pairs : all shared
example: BCl_3 or CH_2O



Tetrahedral

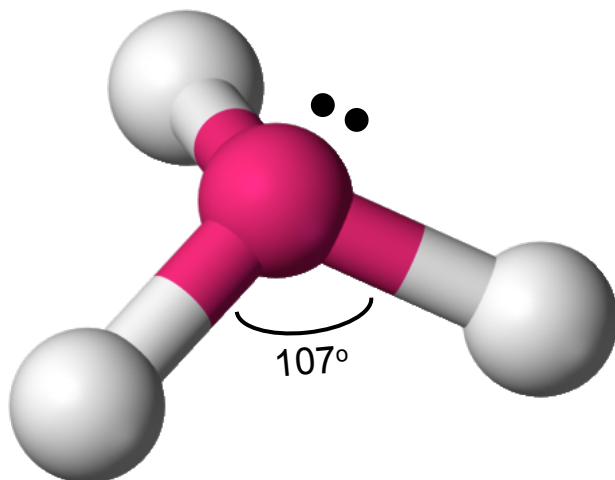
Central atom has 4 effective pairs: all shared
example: CCl_4



Trigonal pyramidal

Central atom has 4 effective pairs : 3 shared and 1 unshared

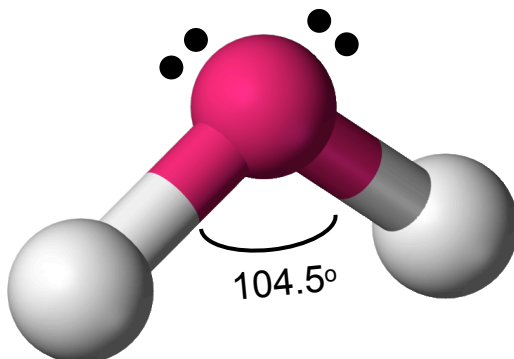
example: PBr_3



Bent Shape

Central atom has 4 effective pairs : 2 shared and 2 unshared

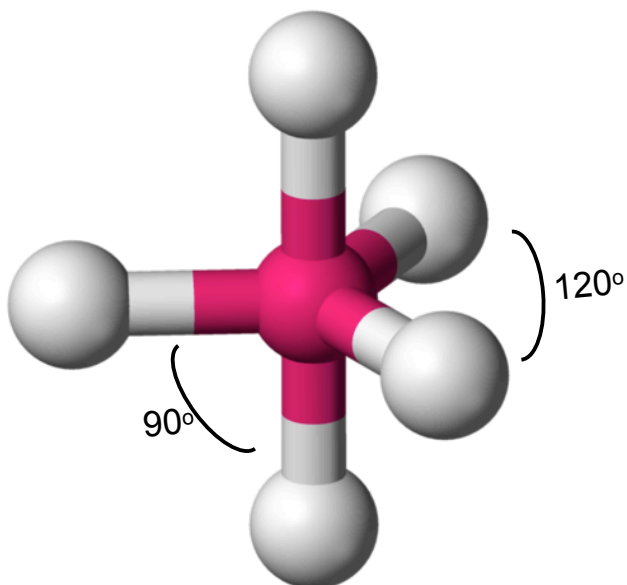
example: H_2O



Trigonal bipyramidal

1) Central atom has 5 effective pairs: all shared

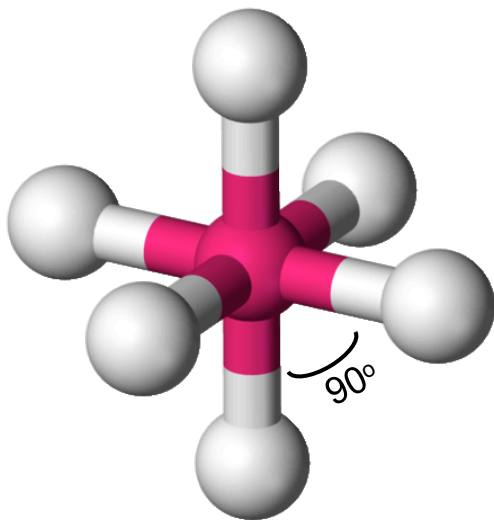
example: PCl_5



Octahedral

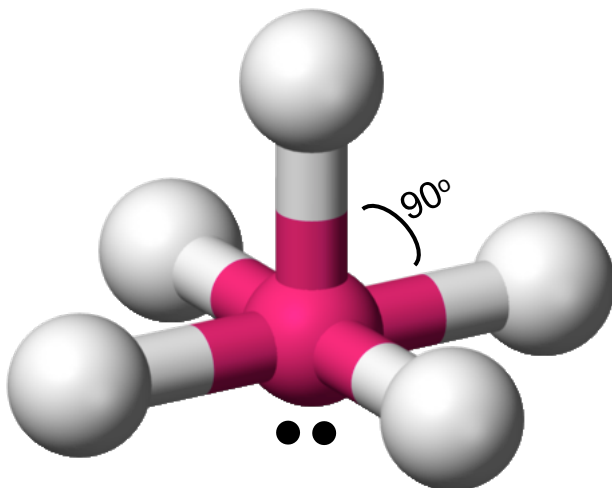
1) Central atom has 6 effective pairs: all shared

example: SF_6



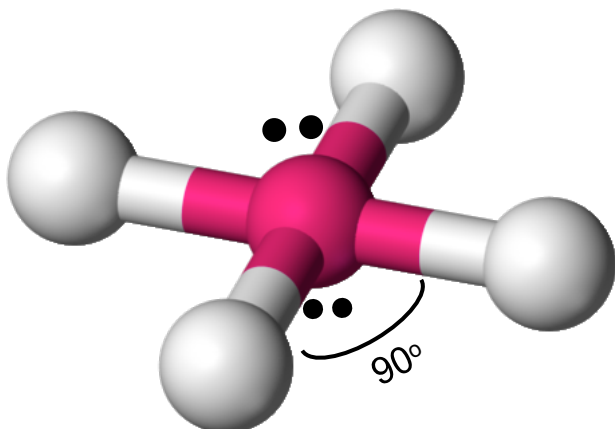
Square Pyramidal

Central atom has 6 effective pairs: 5 shared, 1 unshared
example: PF_5



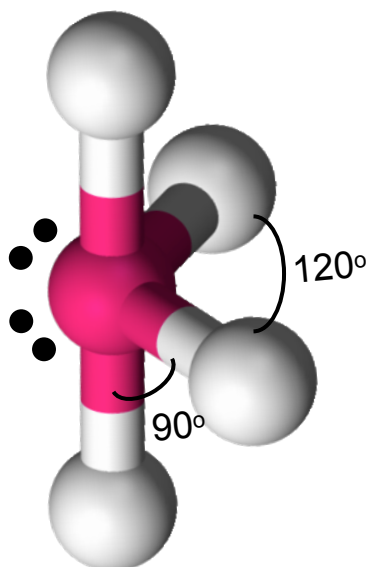
Square planar

Central atom has 6 effective pairs: 4 shared, 2 unshared
example: XeF_4



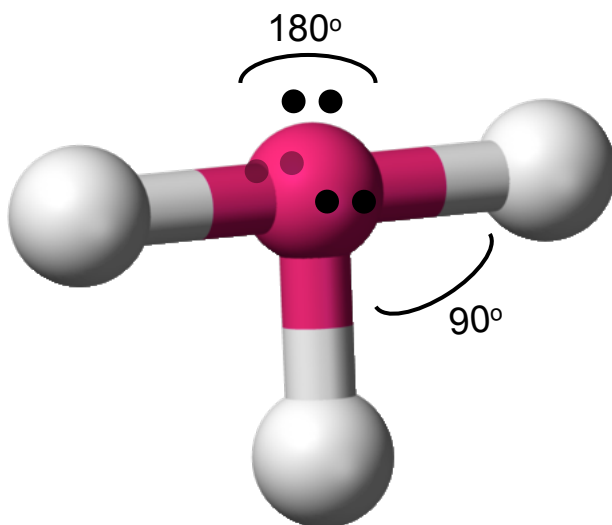
See-saw

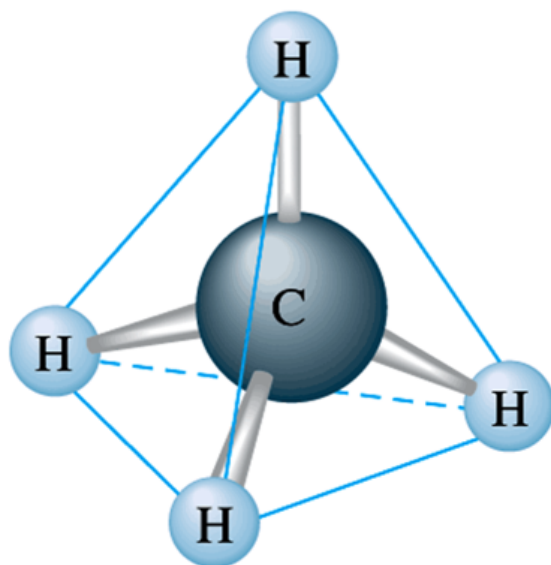
Central atom has 6 effective pairs : 4 shared and 2 unshared
example:



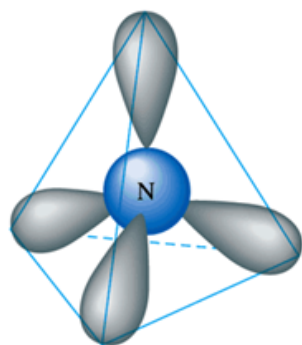
T-shaped

Central atom has 6 effective pairs : 3 shared and 3 unshared
example:

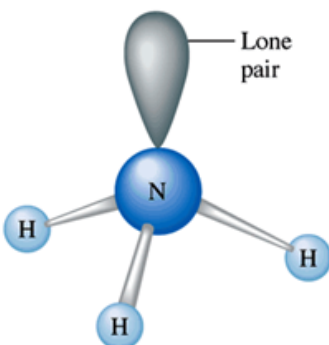




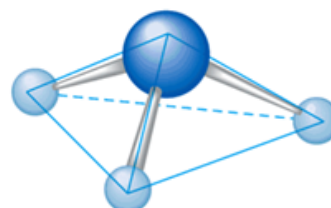
What is the VSEPR geometry?



(a)

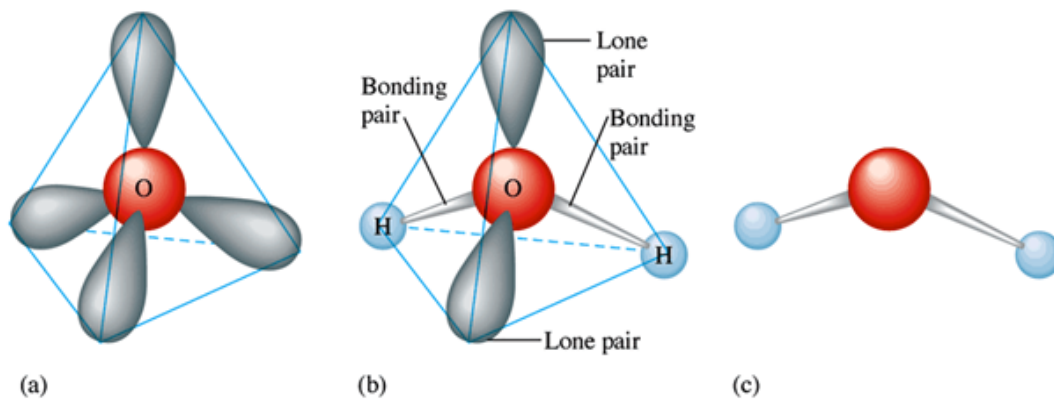
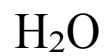


(b)

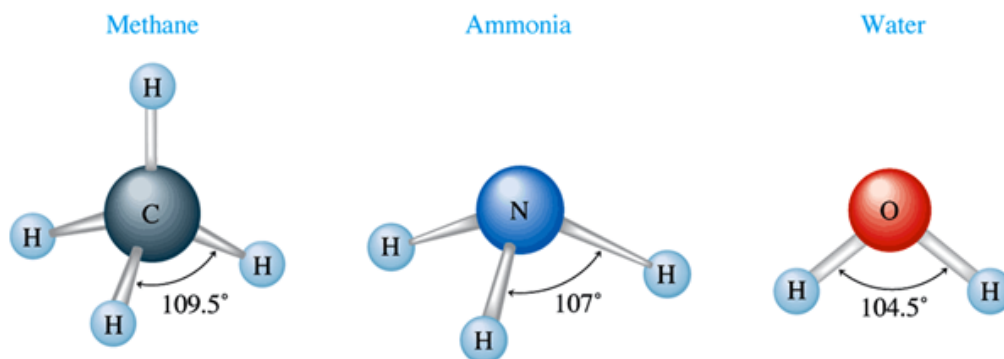


(c)

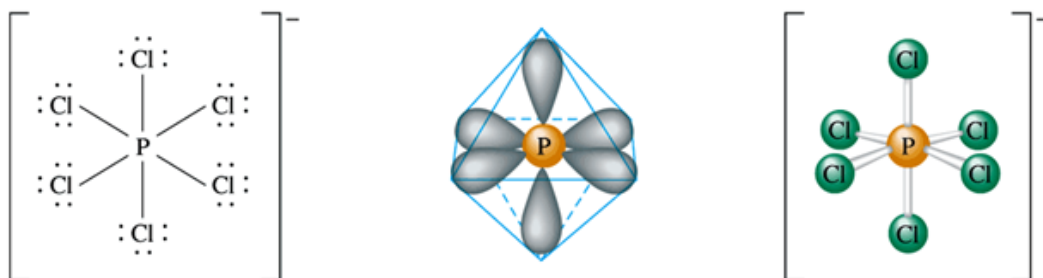
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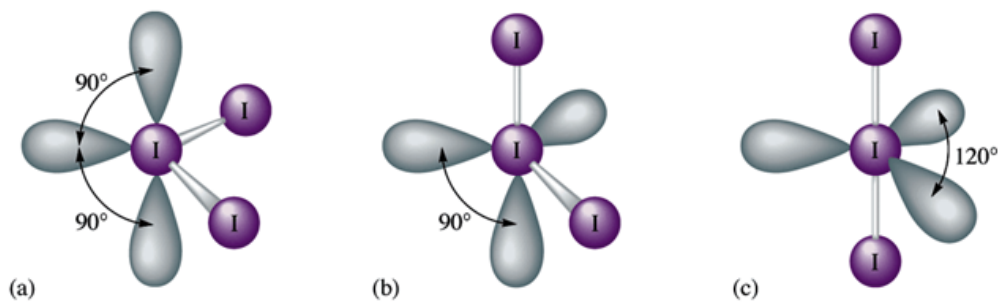
What is the VSEPR geometry?



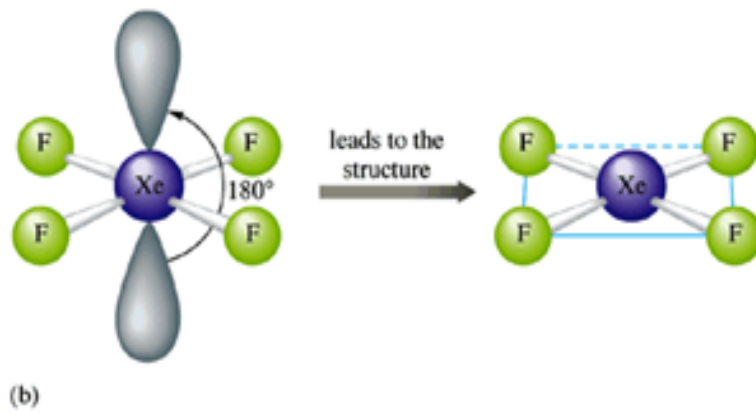
Why do the bond angles decrease?



What is the VSEPR geometry?



What is the VSEPR geometry?



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